



Questions and Answers about Dolby SR for 35mm Release Prints
- Information for Film Production Companies and Distributors -

What is Dolby SR?

Dolby SR (Dolby spectral recording) is the new professional recording process that has become the logical successor to Dolby A-type noise reduction. Dolby SR not only reduces film and tape noise far beyond A-type but also considerably reduces distortion components and improves high- and low-frequency headroom. When used with modern analogue recording equipment, Dolby SR can yield results equal or superior to current digital recording systems.

Does Dolby SR make 35mm optical soundtracks sound better?

Dolby Stereo SR represents a significant improvement in the quality of the 35mm stereo optical soundtrack format. With Dolby SR, background hiss is reduced to a level below the ambient noise levels found in the best cinemas. In addition, frequency response is extended at high signal levels, allowing extreme low- and high-frequency signals to be recorded without distortion; channel separation is improved due to increased crosstalk rejection; and overall dynamic range is significantly improved, especially at the frequency extremes. These combined improvements result in a soundtrack that has less background noise and is purer in quality. While the average dialogue is at the same comfortable listening level, the soundtrack can now go louder for occasional music and effects sequences that need added impact. Quality with this range of volume levels has previously only been possible with 70mm magnetic releases.

How obvious is the improvement to the average cinema-goer?

With high-quality film material and a state-of-the-art cinema, the improvement with Dolby SR is obvious to the entire audience. On the other hand, bad production sound or inadequate equipment such as power amplifiers and loudspeakers, or poor acoustics in the cinema, can hide many of the improvements. The Dolby Stereo SR soundtrack has specifications adequate to ensure that it will never be a limitation to the final quality heard. For this reason, Dolby Laboratories is recommending that SR release prints be played in the better quality cinemas.

Does it help the average film, or only those with special sound value?

All films will benefit from the lower distortion and noise on the SR releaseprint. This results in improved intelligibility of the dialogue. Films with soundtracks that have a wide dynamic range are even further enhanced because of the higher peak level capabilities of the Dolby Stereo SR soundtrack.

How does the sound compare with 70mm magnetic?

Direct comparison of an SR 35mm optical print and a 70mm magnetic print will reveal little difference. The Dolby Stereo SR 35mm soundtrack will usually match the 70mm soundtrack closely in frequency response and volume range. The 70mm print usually sounds slightly more "discrete", because of the six separate tracks used. However, when compared with conventional A-type Dolby Stereo optical releases, the SR prints will also have increased separation because of the reduction in interchannel crosstalk provided by the SR process.

In a typical cinema, an SR optical print may actually sound better than a 70mm print because six-track magnetic requires a higher degree of maintenance to ensure premium sound reproduction. The 35mm optical format, on the other hand, achieves more consistently reliable reproduction, without mechanical contact and the resulting wear of film and sound reproducer.

A performance comparison between the 70mm soundtrack and a Dolby Stereo SR 35mm soundtrack should also take into consideration the high cost of release magnetic prints. Typically, the cost of a 70mm print is 10 times that of the optical alternative.

Will digital sound make Dolby SR obsolete?

No, at least not in the foreseeable future. Even though digital is sometimes loosely used as a buzzword implying better sound, Dolby SR can in fact provide technical specifications equal or superior to digital systems. With Dolby Stereo SR (and even to some degree with conventional Dolby Stereo prints), the limitation on quality of reproduction in the cinema is not the release print but, rather, other elements in the sound system: loudspeakers, amplifiers, and room acoustics. Until a major improvement is made in related cinema equipment and construction techniques, a digital sound recording system for motion picture release prints would not produce any significant improvement over Dolby Stereo SR.

Dolby Laboratories is committed to developing the most practical means of delivering high quality sound to the audience in the cinema, and research includes both analogue and digital systems. The low cost of Dolby Stereo SR in both film production and exhibition makes it a soundtrack format that will be both technically and economically attractive for many years to come.

How early in the production cycle does a decision have to be made about whether or not to release a film in SR?

As early as possible. Ideally, SR should be used as early as the daily transfers to achieve full benefit from the new process. The decision to make an SR version should be taken before pre-mixing commences as, at that point in post-production, different techniques are required for the wider dynamics and frequency response of an SR release.

Does it make production and post-production more difficult?

With good quality original elements, mixing for an SR release is no more difficult than for a conventional soundtrack, and will frequently be easier when the original material has a wide volume range or extended frequency response. Taking full advantage of the SR format requires some extra attention throughout the development of a film's soundtrack. The full capability of the format will only be apparent to the cinema audience if care has been taken to maintain quality throughout the production process. Once a soundtrack element has been degraded by distortion or some other problem, no mixing technique, release print format or cinema equipment can restore the lost quality. The transparency of the SR soundtrack process is, in fact, likely to reproduce the problem with perfect accuracy.

Are there additional Dolby licence fees?

Standard licence fees apply - there is no premium for a Dolby Stereo SR release.

Are additional licence agreements with Dolby Laboratories needed?

No. A new version of the Trademark and Standardization Agreement will include references to technical specifications for an SR release and Dolby Stereo SR trademark licensing.

Does it require a separate mix?

Not necessarily. The Dolby Stereo SR optical soundtrack has an overall level and frequency response characteristic that closely parallels the 70mm soundtrack requirements. The 70mm mix procedures can, therefore, be used to record material acceptable for both a 70mm release and the SR 35mm optical release. Typically, for the A-type release, the same mix is "contained" in level to fit within the restrictions imposed by the A-type optical soundtrack. A full remix is not required, provided that the final recordings are of the quality necessary for an SR release.

Does the mix cost more for a Dolby Stereo SR release?

As each intended theatrical release format (Dolby Stereo A-type, 70mm, Dolby Stereo SR, mono) requires a separate print master, an SR release will require a maximum of one day's additional dubbing time to complete the SR print master.

How many mixing facilities are equipped for SR?

Post-production facilities have been foremost in appreciating the benefit of using Dolby SR during the mixing process, and many film dubbing theatres are already able to handle a full Dolby SR mix-down. Dolby Laboratories maintains a list of international post-production facilities which are equipped for an SR mix.

Will more help be needed from Dolby personnel during the mix?

A Dolby engineer will be able to make adoption of the new techniques much easier during post-production of the first few Dolby Stereo SR releases in each studio. Taking full advantage of the capability of an SR soundtrack requires changes in procedures throughout the film sound production process.

What does the release print cost?

A 35mm Dolby Stereo SR print costs no more than a conventional 35mm Dolby Stereo print. As a separate negative (or negatives) is required, optical transfer costs are increased. To put this increase into perspective, though, it should be recalled that the sound quality of a Dolby Stereo SR print is comparable with that of 70mm magnetic - any increased costs during mix and transfer are trivial, when compared with the premium cost of 70mm magnetic prints over 35mm opticals.

Dolby Stereo SR is a good investment for the production, as it enables the film to be played with optimum sound quality, in a rapidly increasing number of cinemas. This can easily produce more effective promotion than much more expensive advertising.

Will Dolby Laboratories still support conventional Dolby Stereo mixes?

Yes. For the past ten years, conventional Dolby Stereo has been the choice release format for widescale stereo 35mm distribution. Its technical specifications are appropriate for most films and most cinemas. Films will continue to be released in conventional Dolby Stereo and Dolby Laboratories will continue to support this format. The benefits of a Dolby Stereo SR soundtrack are best realised in those films which have received special care during sound production and post-production, and where prints are exhibited in cinemas with above-average technical quality.

Are there increased problems for labs with the new process?

No. Soundtrack processing is no more critical with Dolby SR than with conventional Dolby Stereo prints. As a Dolby Stereo SR print is likely to be presented in a premium location, however, a distributor may consider it worthwhile to take special care that there are no random picture or sound blemishes.

Is a Dolby Stereo SR print compatible?

Even though many first-run cinemas are being equipped for Dolby Stereo SR playback, the majority of the 13,000 or more Dolby Stereo screens around the world are at present only equipped for conventional Dolby Stereo playback. A 35mm Dolby Stereo SR film soundtrack can be replayed through conventional Dolby Stereo equipment or a mono system, since the dialogue, music and effects will be reproduced. However, for complete accuracy, and to obtain the benefits of the Dolby SR process, a Dolby Stereo SR soundtrack should only be replayed via Dolby SR decoding equipment.

An SR print may well sound acceptable when played in a conventional cinema; but the mix may contain sections which would sound different if it had been created specifically for cinemas not equipped for SR. In order to ensure that in the majority of cinemas the film sound reproduction matches the film-maker's intentions, separate Dolby Stereo release prints are currently recommended. However, the spread of Dolby Stereo SR playback systems should soon make single inventory possible.

What happens if an SR print is played back in mono or through a conventional Dolby Stereo processor?

Here there are several factors to be taken into account. The wider dynamic range possible with a Dolby Stereo SR mix can only be achieved with SR decoding. With no form of Dolby decoding, the dynamic range is reduced: this is desirable in a typical mono cinema, where the existing equipment will not usually handle a very wide dynamic range. With reproduction via Dolby Stereo cinema processors without SR (but with conventional Dolby A-type decoding), the dynamic range will be somewhere between that attained with full SR decoding and that with mono (non-Dolby) reproduction.

The exceptional sound quality of a Dolby Stereo SR print will only be fully achieved with playback in Dolby Stereo SR. With mono or normal Dolby Stereo replay of an SR print this quality will not be achieved and it will sound different from the original. However, there will be no fundamental problems, since all the elements of the soundtrack will be reproduced. One single spool in the wrong soundtrack format will of course be more noticeable, as the sound balance will alter at the changeover.

Experience with productions in SR has been very encouraging, since film distributors and cinemas have so far found the quality commercially acceptable for compatible prints. However, in principle the subjective quality of each new production and foreign-language version should be checked by monitoring the mix for "compatible" reproduction.

How should the prints be identified?

There is no visual difference between a 35mm Dolby Stereo SR print and a conventional 35mm Dolby Stereo print. For this reason, there should be as much clear identification as possible, in order to avoid confusion during original print shipment, format selection in the projection booth and later in the film exchange. The head leader should be clearly marked "SR", and some laboratories are printing "DOLBY STEREO SR" in the soundtrack area at the beginning of each reel. Obviously, it is also helpful if boxes and shipping cans are marked, and self-adhesive labels for this purpose are available, free of charge, from Dolby Laboratories. Some laboratories use format numbers to identify the type of soundtrack, and SR follows logically in the sequence:

Format 01 - Academy Mono

Format 04 - conventional Dolby Stereo

Format 05 - Dolby Stereo SR

What logo should be on the film?

The Dolby Stereo logo has been extended for SR, as shown below:



This logo should be included in the credits of SR prints. Ideally, conventional Dolby Stereo prints of the same film should use the standard logo:



In practice, though, we recognize that it is rarely possible to change title sequences for different prints, and the single logo of choice should be the SR version. A couple of the first films to be released with some prints with SR soundtracks have used both logos - in this case, if it proves helpful to the layout, the conventional Dolby Stereo logo can be smaller than the Dolby Stereo SR credit. Artwork sheets of both the Dolby Stereo SR and standard Dolby Stereo logos are available on request from Dolby Laboratories.

What effect does Dolby SR have on print life?

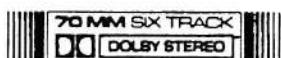
The Dolby SR process significantly reduces the annoyance of medium- and low-level dirt and scratch noise. Normally, the build-up of dirt and scratches in the picture area will be more annoying to the eye than the same level of dirt and scratches played back through the SR process will be to the ear. Print life will, therefore, probably be limited by picture condition.

How should national advertising be handled for a film which has Dolby Stereo SR release prints?

As in the case of credits on the film, even with only a limited number of SR prints, the Dolby Stereo SR logo should be included in national advertising. If space and circumstances permit, the conventional Dolby Stereo logo can also be included.

How should local block advertising be handled?

Block advertising should flag the presentation in each cinema listed. Any addition to the standard national artwork should only include the SR logo if one or more cinemas listed in the advertisement are playing an SR print and have Dolby Stereo SR equipment. A list of cinemas would typically be flagged as follows:



- A 70mm Dolby Stereo print played in a cinema through a 70mm Dolby processor



- A 35mm Dolby Stereo SR print played in a cinema through a Dolby Stereo processor which is equipped for SR playback



- A 35mm Dolby Stereo print played in a cinema through a standard Dolby Stereo processor

Block advertising of this type can use the conventional Dolby Stereo logo and the Dolby Stereo SR logo. The line "in selected theatres" should be dropped.

What should specific cinemas say?

A cinema can reproduce the national advertising material provided by the distributor, which may include the Dolby Stereo SR logo, but will be qualified by the phrase "in selected theatres". However, promotional material generated by a specific cinema, in advertisements or on-site, can only use the Dolby Stereo SR logo if it is playing a Dolby Stereo SR print through a processor manufactured by Dolby Laboratories which is equipped for SR playback.

What promotional help does Dolby Laboratories provide for a film released in Dolby Stereo SR?

Periodically, Dolby Laboratories takes space in exhibitor journals, listing those forthcoming releases which will have Dolby Stereo SR soundtracks. In addition, advertising budgets permitting, Dolby Laboratories will share with a distributor the cost of a trade advertisement announcing the availability of SR prints.

What is available to help a cinema?

Dolby Laboratories makes several on-site promotional aids available to SR-equipped cinemas which are presenting SR films. These include one-sheets and marquee signs, and pre-feature mini-trailers (currently in preparation).

How many cinemas are equipped to play Dolby Stereo SR?

A small but growing number of cinemas have already installed Dolby Stereo SR permanently. As the number of films being released using Dolby SR increases, and as decoding equipment becomes readily available through cinema supply companies, the number of permanent installations should grow quickly. During the initial introduction of the Dolby Stereo SR process, many distributors have purchased decoding equipment and installed it in certain cinemas for the duration of a specific release.

How does a distributor know which cinemas are equipped for SR?

A list is available from Dolby Laboratories which indicates those screens which are permanently equipped for Dolby Stereo SR. The list is regularly updated and, in addition, distributors are welcome to call and ask about the latest equipped screens in a specific area.

How much does it cost a cinema to install Dolby Stereo SR?

The adaptor to convert an existing Dolby Stereo cinema for SR playback costs £1,650 and takes two or three hours to install. If a cinema is not equipped for conventional Dolby Stereo playback, or requires improved power amplifiers or loudspeakers to complement the SR soundtrack, the costs can be significantly greater.

Will most existing Dolby Stereo cinemas update to Dolby Stereo SR?

Over a period of time, many will choose to add SR decoding capability to their equipment. However, only well maintained cinemas that are equipped with high-quality power amplifiers and loudspeakers will be able to reveal the full benefits of the SR process. Dolby Laboratories strongly urges cinemas considering the addition of Dolby Stereo SR decoding equipment to upgrade the remainder of the sound system to equally high standards.

Does Dolby Stereo SR increase day-to-day operational hassles for a cinema?

No. Initially, SR releases were accommodated by exchanging the A-type decoding modules in the Dolby Stereo cinema processor for SR modules. Although somewhat inconvenient, this allowed proper decoding of SR prints for limited runs. The recently introduced SRA5 adaptor allows the cinema processor to be switched between SR, A-type or other formats at the touch of a single button. As a further aid, Dolby Laboratories will shortly introduce an automated soundtrack format identification process, enabling automatic switching between trailers and features in an automated booth with no projectionist.

Does an SR installation require more maintenance?

No. Dolby Stereo SR 35mm prints rely on the same simple optical system used for standard stereo and mono 35mm prints. Provided that the customary routine alignment is carried out, the Dolby SR processor will operate correctly. Better quality cinemas, where SR is most applicable, probably already take good care of maintenance, both for picture and sound.

Will cinema check-outs prior to a major release take longer or cost more for Dolby Stereo SR?

No.

Will Dolby Laboratories continue supporting Dolby Stereo screens that are not equipped for SR?

Yes. As discussed above, Dolby Stereo SR will be a premium soundtrack format and will find application primarily in first-run cinemas. Technical support will continue to be available to every conventional Dolby Stereo cinema.

Is Dolby Stereo SR being adopted for film production internationally?

Yes. The first films in Dolby Stereo SR have already been released. A list of the latest titles, and SR-equipped post-production facilities, is available on request from Dolby Laboratories.

Are separate A-type and SR encoded M & E's required for foreign releases?

No. Normally, SR encoded units can be used to generate foreign language versions in both conventional Dolby Stereo and Dolby Stereo SR.

Which cinemas are equipped for SR and where do I get Dolby Stereo SR prints?

The first cinemas to be equipped for SR were in the USA; initially this was for specific films, and was achieved by replacing the A-type modules in the Dolby Stereo processor with SR modules. Those cinemas that are technically the best equipped have now installed SR permanently, most of them using the Dolby SRA5 adaptor, which simplifies day-to-day operation.

Elsewhere on the international scene, relatively few cinemas are yet equipped to replay the new format; however, the best equipped cinemas in a number of countries have now installed SR and many cinemas are keen to install SR as soon as Dolby Stereo SR prints are available. A current list of these cinemas and films is available from Dolby Laboratories.

It is helpful if film distributors can let us know several weeks in advance which films will have Dolby Stereo SR copies available: that will allow time for cinemas that have booked those films to be equipped for SR. Dolby sound consultants involved with the production of foreign-language SR versions are in contact with the original studios to ensure that SR-encoded M & E's are available.

Original Productions in Dolby Stereo SR

as at August 1988

The films listed below are productions which have already appeared with Dolby Stereo SR encoded soundtracks, or will shortly do so. While Dolby Laboratories has made every effort to ensure the accuracy of this list, late changes in production plans or in post-production may mean that some of the films listed are not mixed in Dolby Stereo SR, or are not available in Dolby Stereo SR in many countries.

Action Jackson	Powaqqatsi
Adventures of Baron Munchausen	Presidio
Alien Nation	Rambo III
Betrayed	Red Heat
Breaking Loose	Return to Snowy River
Colors	Robocop
Dead Calm	Saxo
Farewell to the King	Star Trek IV: The Voyage Home
High Spirits	Throw Mama from the Train
Innerspace	Tucker
Kansas	U2 - Rattle and Hum
La Boheme	Unbearable Lightness of Being
Le Grand Bleu	Wall Street
Married to the Mob	Willow
Monkey Shines	Wolves of Willoughby Chase
Paperhouse	



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